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ABSTRACT

A Study on Factors Undermining the Incorporation of Green Principles into the Design Development Stage of Building Projects in the Gauteng Province of South Africa

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ABSTRACT

Design development is a stage of the construction procurement process where the requirements of a project are specified including the technical and performance specifications. Thus the design development stage provides a significant opportunity in construction to incorporate green principles into building procurement to achieve energy efficiency, resource efficiency and environmental friendliness in the life cycle of built assets thus producing green buildings. However, this does not always happen in practice and in South Africa some of the reasons underlying this problem have not yet been fully researched and understood. Therefore, the purpose of this research was to conduct a study into factors that undermine the incorporation of green principles into building projects at the Design Development Stage.

This research aims to examine the factors in the Design Development Stage in projects that undermine it from producing green buildings in South Africa's construction industry, the Gauteng province being the focus of the study. The study investigated what is required from procurement processes generally to result in green buildings, then further narrowed down what is specifically required from actions undertaken at the Design Development Stage of projects to produce green buildings. Actions undertaken by the main practitioners involved in the Design Development Stage in Gauteng was then investigated in order to determine the factors within the Design Development Stage that undermine it from producing green buildings.

Based on the critical review of the literature, six factors were systematically identified to facilitate each phase of the Design Development Stage producing green buildings, namely; "green concepts", "green design", "green specifications", "green cost systems", "green financial viability systems" and "green programmes".

Based on the knowledge acquired from the literature about the processes involved in the Design Development Stage, questions were developed to enable semi-structured interviews and a questionnaire survey to be conducted. The questionnaire was designed and administered online to architects and quantity surveyors using the Qualtrics software which also supports the analysis of data provided by respondents. Data collection for the study was restricted to the Gauteng Province of South Africa which contains the country's largest city, Johannesburg, its administrative capital, Pretoria, and a population of around 13 million. Hence there is a significant concentration of building projects and professionals in this Province to provide a useful setting for the collection and analysis of data to achieve the study objectives.

ABSTRACT

Results flowing from the analysis of information collected from 25 architects and 20 quantity surveyors indicate that the main factors undermining the incorporation of green principles in the Design Development Stage are “Green cost systems”, “Green financial viability systems” and “Green Programmes”. The six factors identified that facilitate the Design Development Stage producing green buildings were as follows; “Green concepts”, “Green design”, “Green specifications”, “Green cost systems”, “Green financial viability systems” and “Green programmes”. Although the findings indicate that the incorporation of green principles at the Financial Planning Phase and Project Programme Phase are the main hindrance towards producing green buildings; this must be looked at with care as the Design Phase offers the greatest chance to produce green buildings.

It is recommended that further research to other provinces with a larger sample size and frame is undertaken to gain a more accurate depiction of South Africa’s construction industry. Furthermore a study to *why* these factors are underperforming and how they can be configured to work to green buildings is recommended.